

CLAIMS

1. Method for processing a low ohmic contact structure to a
5 buried conductive layer in or below a device layer forming part of a
semiconductor component, said method comprising providing a highly
doped region within said device layer reaching said buried conductive
layer

characterized in that

10 said providing said highly doped region is followed by etching a
trench through said highly doped region to a final depth which extends
at least to the semiconductor substrate underneath said buried
conductive layer.

15 2. Method according to claim 1

characterised in that

said highly doped region is provided by means of a high-
temperature doping step through an insulator masking layer,
whereby said insulator masking layer is also used for defining said
20 trench region.

3. Method according to claim 2

characterised in that

said insulator masking layer includes an oxide layer as top layer.

25

4. Method according to claim 2

characterised in that

said high-temperature doping step is performed through a
polysilicon layer which is deposited on top of said insulator masking layer.

30

5. Method according to claim 1
characterised in that
said providing said highly doped region is preceded by pre-
etching said trench until a predetermined depth which is less deep than
5 said final depth.

6. Method according to claim 4
characterised in that
said providing said highly doped region is preceded by pre-
10 etching said trench until a predetermined depth which is less deep than
said final depth.

7. Method according to claim 5
characterised in that
15 said predetermined depth is at minimum the depth of the upper
edge of said buried layer minus the vertical outdiffusion depth of said
highly doped region.

8. Method according to claim 6
20 characterised in that
said pre-etching of said trench is followed by the deposition of said
polysilicon layer, whereby said highly doped region is provided through
diffusion of a dopant through said polysilicon layer into said device
region.

25
9. Method according to claim 1
characterised in that

said final depth of said trench is related to the maximum breakdown voltage between two buried layer regions separated by said trench.

5 10. Method according to claim 9
 characterised in that
 said etching of said trench until said final depth is followed by a
 step of providing a stopper implant region beneath said trench
 whereby said maximum breakdown voltage is further determined
10 by said stopper implant region.

11. Semiconductor structure including a trench in a device layer
on top of a buried layer, said trench extending at least through said
buried layer to a semiconductor substrate beneath said buried layer,
15 said trench being surrounded by a doped region which vertically
 extends at least to the upper edge of said buried layer and which has a
 doping concentration which is higher and of opposite type than the
 doping concentration of said device layer.

20 12. Semiconductor structure according to claim 11
 characterised in that
 said semiconductor structure further includes a highly doped
 stopper implant region beneath said trench in said semiconductor
 substrate.